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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,035	10/27/2003	Jae Suk Lee	20061/OF03P152	3896
34431	7590	10/25/2004	EXAMINER	
GROSSMAN & FLIGHT, LLC 20 N. WACKER DRIVE SUITE 4220 CHICAGO, IL 60606			BEREZNY, NEMA O	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 10/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/694,035	LEE, JAE SUK	
	Examiner	Art Unit	
	Nema O Berezny	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 6-15 in the reply filed on 8-13-04 is acknowledged. Cancellation of claims 1-5 is acknowledged; claims 6-15 are currently pending.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramdani et al. (6,709,989) in view of Kub et al. (4,499,653). Ramdani discloses a method to fabricate a semiconductor device, the method comprising: forming an oxide layer on a substrate (col.2 lines 26-34; col.3 lines 31-59); forming an aluminum layer on the oxide layer (col.5 lines 1-8); and forming a stress-relief layer on the aluminum layer (col.5 lines 15-27). However, Ramdani does not clearly disclose forming a metal

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interconnect. Ramdani would look to one such as Kub for electrical interconnection to other devices because Kub discloses forming an uppermost metal interconnect on a semiconductor substrate (Fig.18 el.47,48). Therefore, it would have been obvious to a person skilled in the art at the time of the invention to use the interconnect of Kub with the method of Ramdani in order to electrically connect said semiconductor device to other devices or an external structure **[claim 6]**.

Based upon the rejection of claim 6 above, Ramdani also discloses wherein forming the stress-relief layer comprises: performing a plasma treatment on a surface of the aluminum layer to form an aluminum oxide layer (col.5 lines 15-20); and annealing the aluminum oxide layer (col.5 lines 8-12) **[claim 7]**; wherein the plasma treatment uses at least one of N₂O gas and O₂ gas (col.5 lines 15-20) **[claim 8]**; wherein the annealing is performed at a temperature of 200 to 400C (col.5 lines 8-12) **[claim 9]**; wherein the aluminum oxide layer is annealed in an atmosphere of inert gas (col.5 lines 12-15, 28-32) **[claims 10, 12]**; wherein the inert gas is at least one of Ar and He (col.5 lines 12-15, 28-32) **[claim 11]**; and wherein the aluminum oxide layer is annealed in an atmosphere of gas including at least one of N₂O, O₂, N₂, and H₂ (col.5 lines 12-15, 28-32) **[claims 13, 14]**.

Based upon the rejection of claim 6 above, Ramdani does not clearly disclose a multi-interconnect adapted device or a power device. However, Ramdani would look to one such as Kub for electrical interconnection to other devices because Kub discloses wherein the semiconductor device is at least one of a multi-interconnect adapted device and a power device (col.4 lines 21-24). Therefore, it would have been obvious to a

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person skilled in the art at the time of the invention to use the device of Kub with the method of Ramdani in order to electrically connect said semiconductor device to other devices or an external structure **[claim 15]**.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nema O Berezny whose telephone number is (571) 272-1686. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NB


Nema Berezny